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No. 1 of 20 Atty. docket no. 18-01
 Title: Plant-derived Molecules ... Therefor
 Filing date: February 8, 2002
 Inventors: Anderson et al.
 USSN: 10/072,809

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NaPdfl

10 20 30 40 50 60
 ATGGCTCGCTCCTTGTGCTTCATGGCATTGCTATCTGGCAAGGATGCTCTTGTTGCC
 M A R S L C F M A F A I L A R M L F V A
 -25 -20 -10

70 80 90 100 110 120
 TATGAGGTGCAAGCTAGAGAATGCAAAACAGAAAGCAACACATTCCTGGAATATGCATT
 Y E V Q A R E C K T E S N T F P G I C I
 1

130 140 150 160 170 180
 ACCAAACCACCATGCAGAAAAGCTTGTATCAGTGAGAAATTACTGATGGTCATTGTAGC
 P K P P C R K A C I S E K F T D G H C S
 20 30

190 200 210 220 230 240
 AAAATCCTCAGAAGGTGCCTATGACTAACCCATGTGTGTTGATGAGAAGATGACTAAA
 K T L R E R C L C T K P C V F D E K M T K
 40 50

250 260 270 280 290 300
 ACAGGAGCTGAAATTGGCTGAGGAAGCAAAACTTGGCTGCAGCTTGCTTGAAGAA
 T G A E I L A E E A K T L A A A L L E E
 60 70

310 320 330 340 350 360
 GAGATAATGGATAACTAATTAGAGATTAGAAGAAATTAGGATGCAGTATCACACATAAT
 E I M D N *
 80

370 380 390 400 410 420
 AAAGTTTCTACCTTCTTAAAGTAGCTATGTTGTTAATTGGCTTTAGTAGC

Figure 1



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430 440 450 460 470 480
CTTTTATTACACTTAAATAAGTGTGGCACTTCAATCCTTGTGCAATCTTGCACTAAGT
490 500 510 520 530 540
TTATTTGTGTACTTTAATGAAAATGACCTCTATGGTCTTGGTTAAAAAAAAAAAAA
541
A

Figure 1 continued



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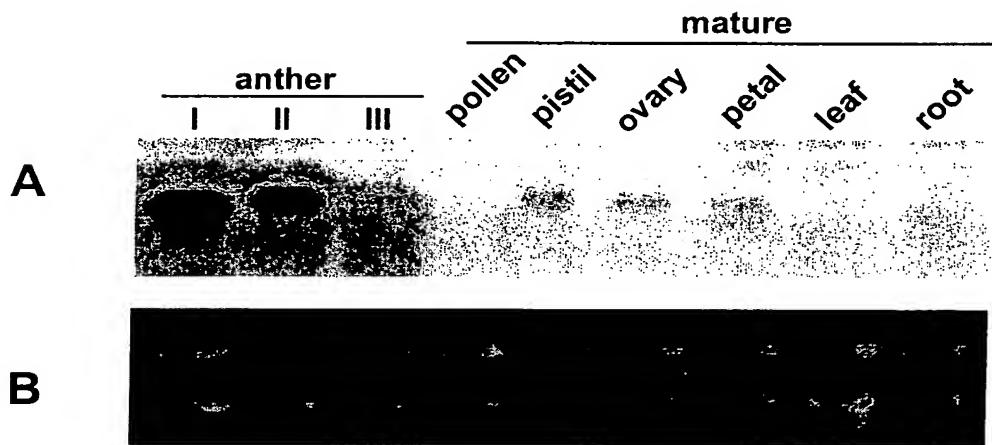
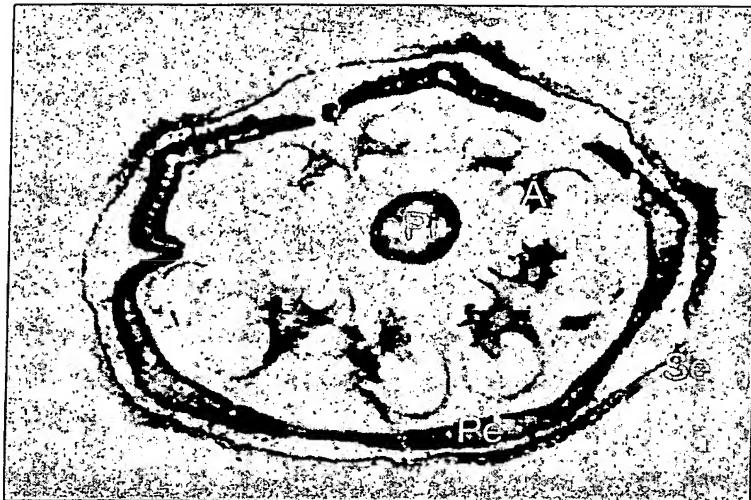


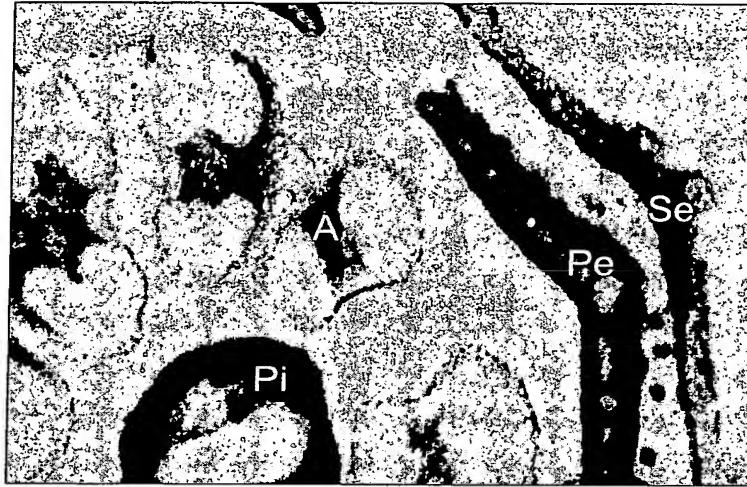
Figure 2



A



B



C



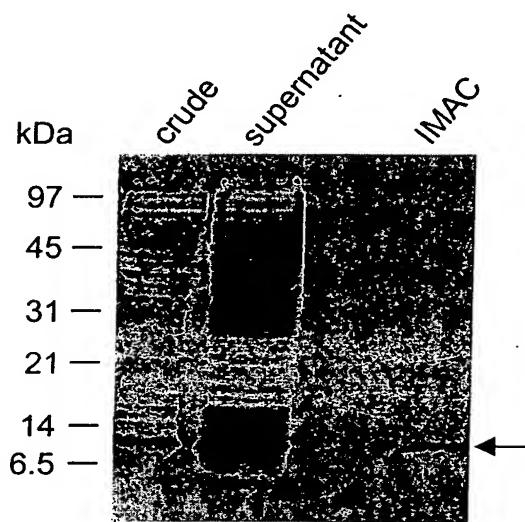
Figure 3

O I P E JC13
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A



B

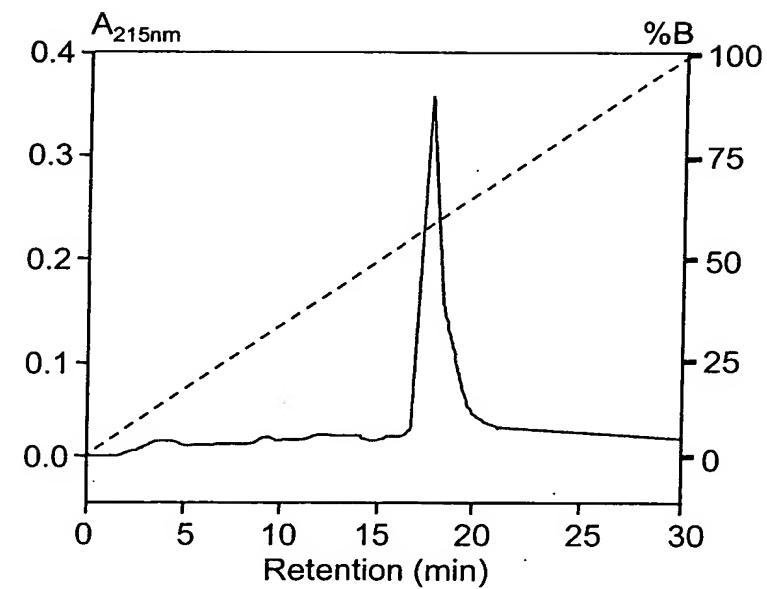
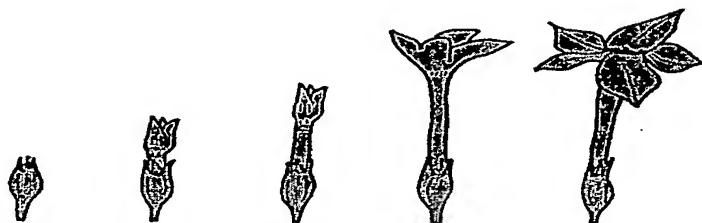


Figure 4



A



immature

mature

B

bud

length (mm)

5.10

20.30

40-50

60-70

70-80

kDa

14.4 —

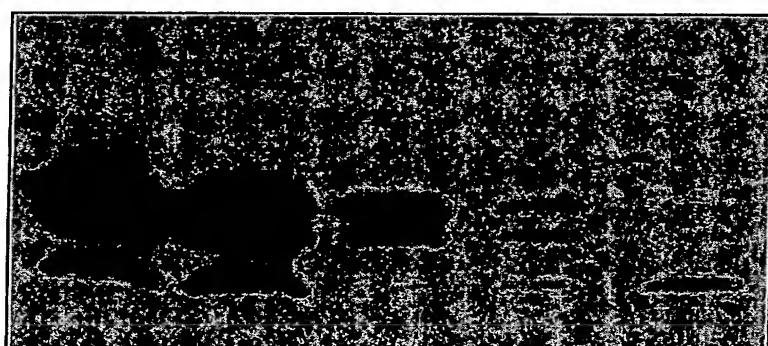
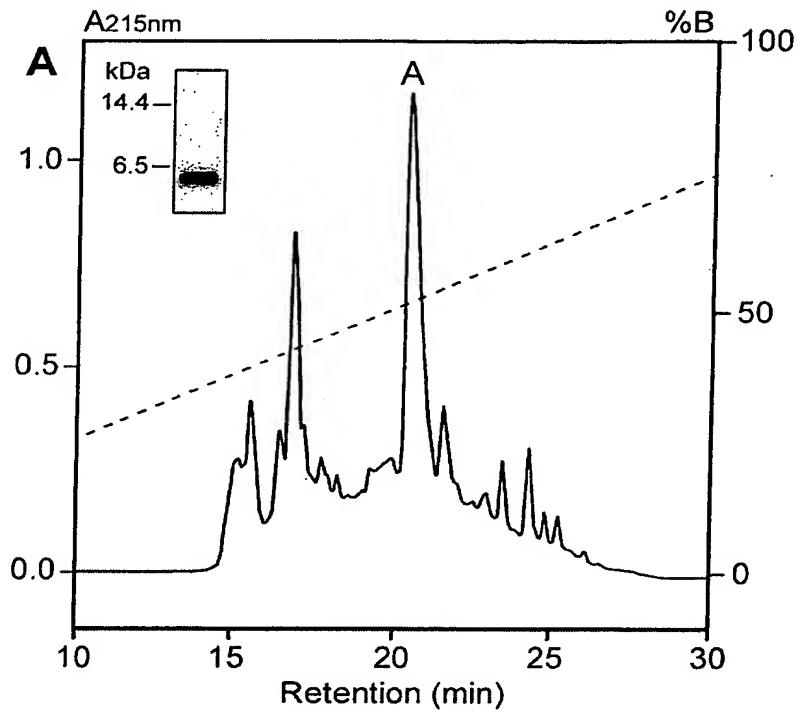


Figure 5



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B

| | Peak A |
|---------------------|----------|
| Protein | NaPdf1 |
| % Acetonitrile | 30.7 |
| N-terminal sequence | RExKTESN |
| Predicted mass (Da) | 5296.0 |
| Observed mass (Da) | 5296.7 |

Figure 6



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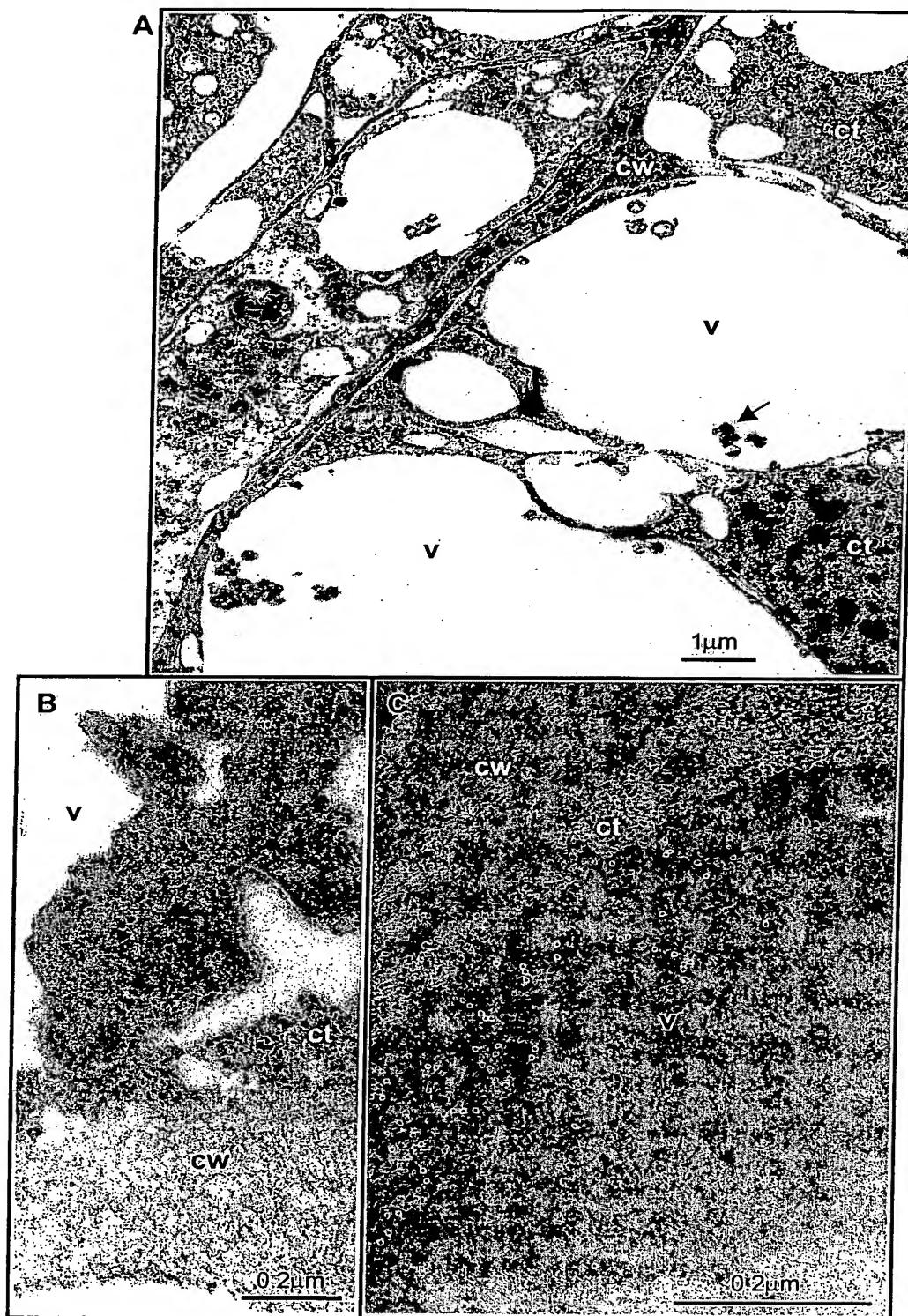


Figure 7



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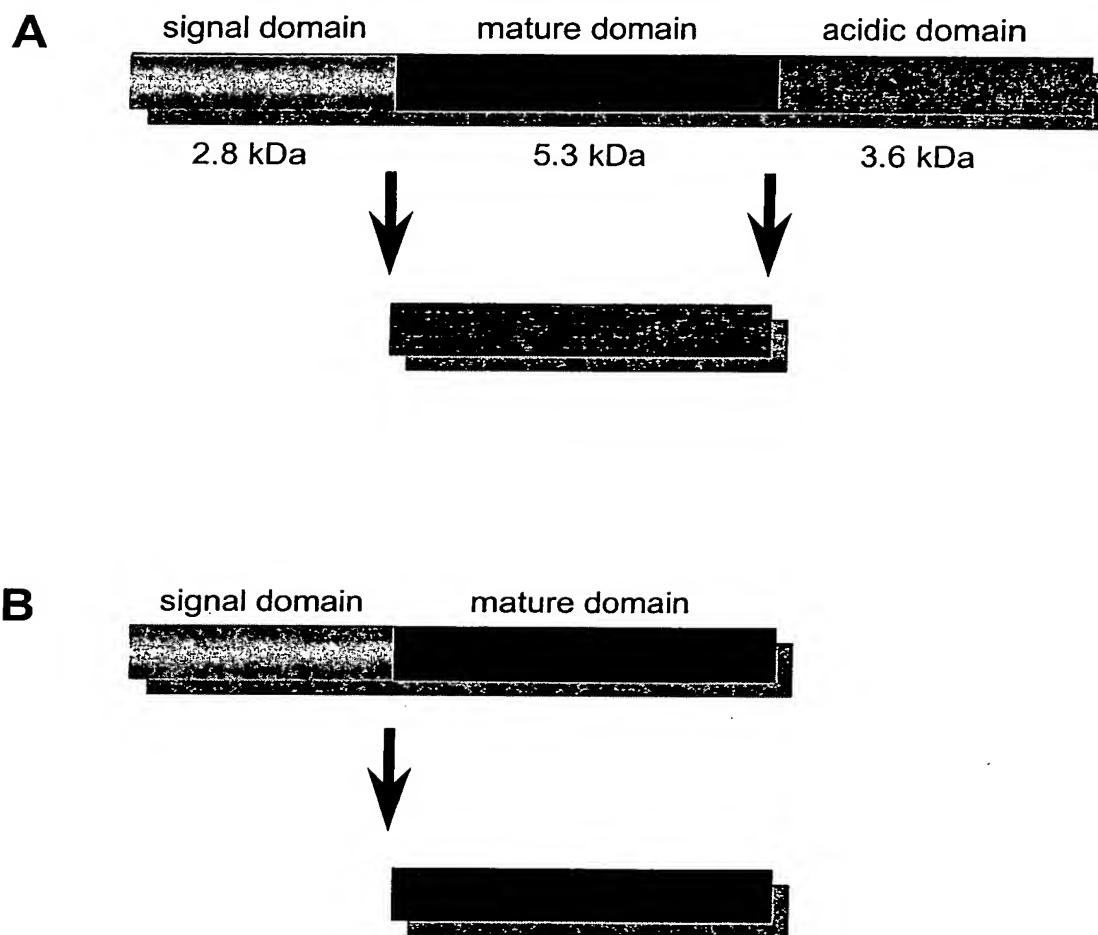


Figure 8



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| | | |
|---------|-----------|---|
| NaPdf1 | (<400>18) | MARSICFMAFAILAMMLFVAYEV-----QA-RECKTESNTFPGICITKPP |
| FST | (<400>20) | MARSICFMAFAILAMMLFVAYEV-----QA-RECKTESNTFPGICITKPP |
| TPP3 | (<400>21) | MARSICFMAFAILAMMLFVAYEV-----EAQQICKAPSQTFPGLCFMDSS |
| NTS13 | (<400>22) | MANSMRFFATVLLIALLVTATEMGPMTIAEA-RTCESQSHRFKGPCSRDSN |
| PPT | (<400>23) | MGRSIRLFATFFLIAMLFSTEMGPMTSAEA-RTCESQSHRFHGTCVRESN |
| ATPIIIa | (<400>24) | MKLSMRLISAVLIMFIMFVATGMGPVT-VEA-RTCESQSHRFKGTCVSASN |

| | |
|---------|--|
| NaPdf1 | CRKACISEKFTDGHC SKILRRCLCTKPCVFDEKMTKTGAEILAEEAKTLAAALLEEEIMDN |
| FST | CRKACISEKFTDGHC SKLRRCLCTKPCVFDEKMIKTGAETLVEEAKTLAAALLEEEIMDN |
| TPP3 | CRKYCIKEKFTGGHC SKLQRKCLCTKPCVFDKISSEVKA-TLGEAKTLSEVVL EEEIMME |
| NTS13 | CATVCLTEGFSGGRC PWIPPRCFCTSPC----- |
| PPT | CASVCQTEGFIGGNCR AFRRRRCFCTRNC----- |
| ATPIIIa | CANVCHNEGFGVGGNCRGFR RRCFCTRHC----- |

Figure 9



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| | | | |
|--------------------------------|---------|--|-----------|
| <i>Nicotiana alata</i> | NaPdfl | - REC - KTESNTFP - GICITKPPCRKACIS - EKFTDGH - CSK - - ILRCLCTKPC - | (<400>8) |
| <i>Nicotiana tabacum</i> | FST | - REC - KTESNTFP - GICITKPPCRKACIS - EKFTDGH - CSK - - LLRCLCTKPC - | (<400>25) |
| <i>Lycopersicon esculentum</i> | TPP3 | - QIC - KAPSQTFP - GLCFMDSSCRKYC1K - EKFTGHH - CSK - - LQRCLCTKPC - | (<400>26) |
| <i>Solanum tuberosum</i> | P322 | - RHC - ESSLSHRFK - GPCTRDSNCASVCET - ERFSGGN - CHG - F - RRRCFCTKPC - | (<400>27) |
| <i>Petunia inflata</i> | PPT | - RTC - ESQSHRFH - GTCVRESNCASVCQT - EGFIGGN - ORA - F - RRRCFCTRNC - | (<400>28) |
| <i>Glycine max</i> | SE60 | - RVC - ESQSHGFH - GLCNRDHNCALVCRNE - G - FSGGRKKG - F - RRRCFCTRNC - | (<400>29) |
| <i>Hordeum vulgare</i> | Y1-H | - RIC - RRRSAGFK - GPCVSNKNCQVCME - G - WGGGNCDG - - PLRCKCMRRC - | (<400>30) |
| <i>Sinapis alba</i> | M2A | pQKLC - QRPSTW5 - GVGNNNACRNQC1NLEKARHGS - CNYVPPAHKICYFPC - | (<400>31) |
| <i>Solanum tuberosum</i> | PTH-St1 | - RNC - ESSLSHRFK - GPCTRDSNC - - - - - | (<400>32) |
| <i>Raphanus sativus</i> | Rs-AFP1 | pQKLC - ERPSGTWS - GVGNNNACKNQC1NLEKARHGS - CNYVFAHCKICYFPC - | (<400>33) |
| <i>Sinapis alba</i> | Rs-AFP2 | pQKLC - QRPSTW5 - GVGNNNACKNQC1RLEKARHGS - CNYVFAHCKICYFPC - | (<400>34) |
| <i>Sinapis alba</i> | M1 | pQKLC - ERPSGTWS - GVGNNNACKNQC1NLEKARHGS - CNYVFAHCKICYFPC - | (<400>35) |
| <i>Sinapis alba</i> | M2B | pQKLC - ARPSGTWSSGNCRNNNACRNFCIKLEKSRHGS - CNIPPSNPKCICYFPC - | (<400>36) |
| <i>Triticum turgidum</i> | Y1-P | - KIC - RRRSAGFK - GPCMSNKNCAQVCQME - G - WGGGNCDG - - PFRCKCIRQC - | (<400>37) |
| <i>Triticum turgidum</i> | Y2-P | - KVC - QRSSAGFK - GPCVSDKNCAQVCLQE - G - WGGGNCDG - - PFRCKCIRQC - | (<400>38) |
| <i>Vigna unguiculata</i> | 10kDa | - KTC - ENLVDTYR - GPCFTTGSODDHCKNKEHLLSGR - CR - - - DDVRCWCTRNC - | (<400>39) |
| <i>Sorghum bicolor</i> | S1a2 | - RVC - MGKSAQFK - GLCMRDQNCAQVCLQE - G - WGGGNCDG - - VMROCKCIRQCW | (<400>40) |
| <i>Sorghum bicolor</i> | S1a3 | - RVC - RRRSAGFK - GLCMSDHNCNAQVCLQE - G - WGGGNCDG - - VIRQCKCIRQCW | (<400>41) |
| <i>Dalia merckii</i> | Dm-AMP2 | - EVC - EKASKTWS - GNCGNTGHC - - - - - | (<400>42) |
| <i>Sorghum bicolor</i> | S1a1 | - RVC - MKGSQHHS - FPCISDRLCSNECVKEEGGWTAGYCH - - - - - LRYCRCQKAC - | (<400>43) |
| <i>Pisum sativum</i> | P1230 | - NTC - ENLAGSYK - GVCF - - GGCDRHCRTOEGAISGR - CR - - - DDFRCWCTKNC - | (<400>44) |
| <i>Aesculus hippocastanum</i> | Ah-AMP1 | - LCNERPSQTWS - GNCGNTTAHCDKQCDWKAASHGA - CHKRENHWKCFCYFNC - | (<400>45) |
| <i>Heuchera sanguinea</i> | Hs-AFP1 | - KLC - DVPSGTWS - GHCGNTGHCDNQCKSQQCKDREHFAYGGACHYQFPSVKCFCKRQC - | (<400>46) |
| <i>Dalia merckii</i> | Dm-AMP1 | - ELC - EKASKTWS - GNCGNTGHCDNQCKSWEAGAANGA - CHVRNGKHMCFCYFNC - | (<400>47) |
| <i>Pisum sativum</i> | P139 | - NTC - EHLADTYR - GVCFTNASCDHCKNKAHLISGT - CH - - - DWKCFCTQNC - | (<400>48) |
| <i>Clitoria ternatea</i> | Ct-AMP1 | - NLC - ERASLTWT - GNCGNTGHCDTQCRNWEASKHGA - CHKRGN - WKCFCYFNC - | (<400>49) |

Figure 10



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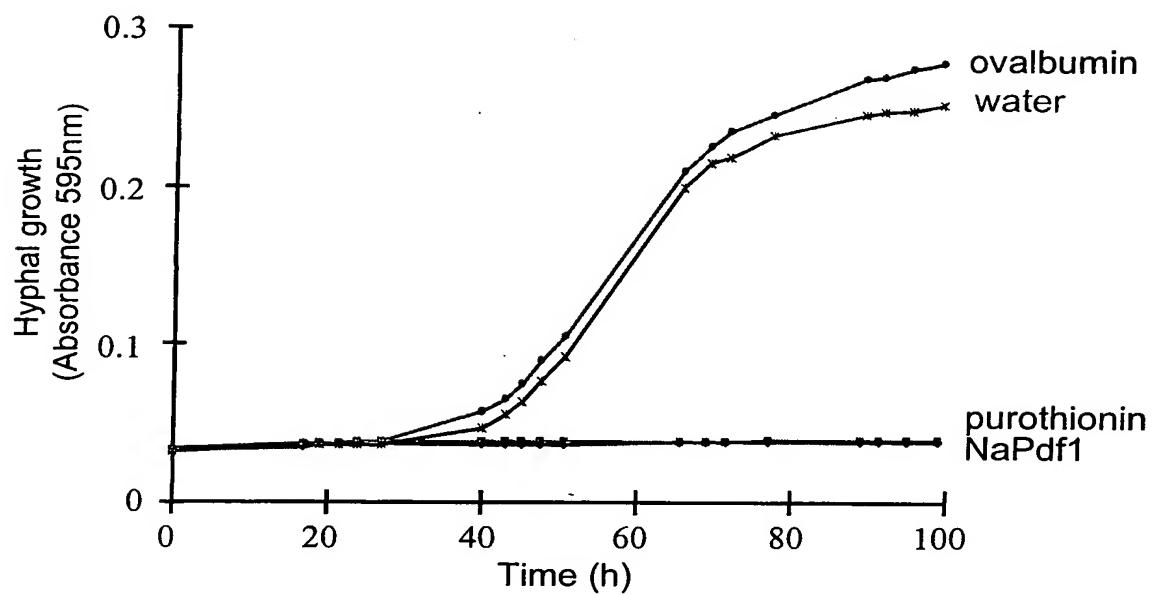


Figure 11

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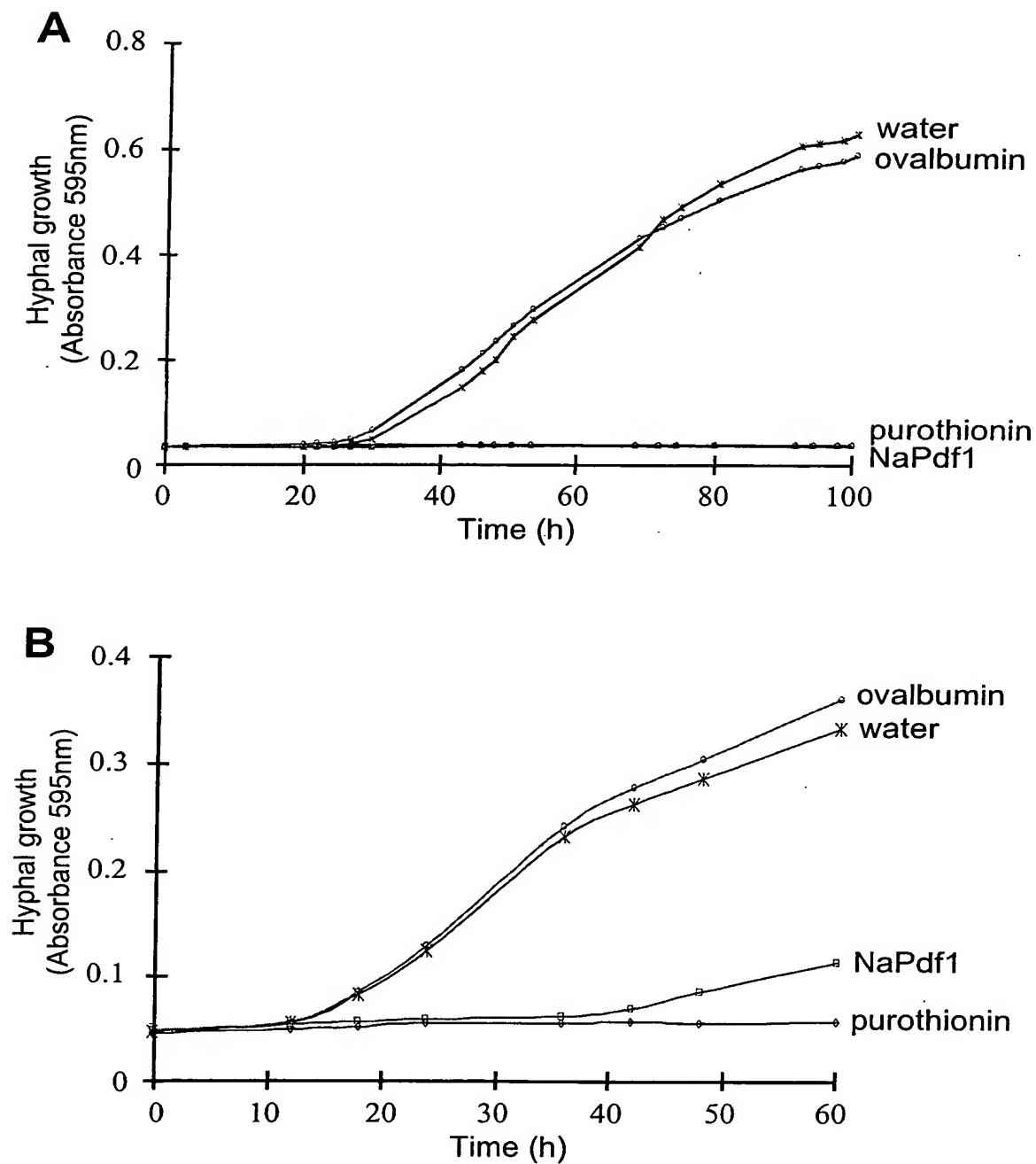


Figure 12



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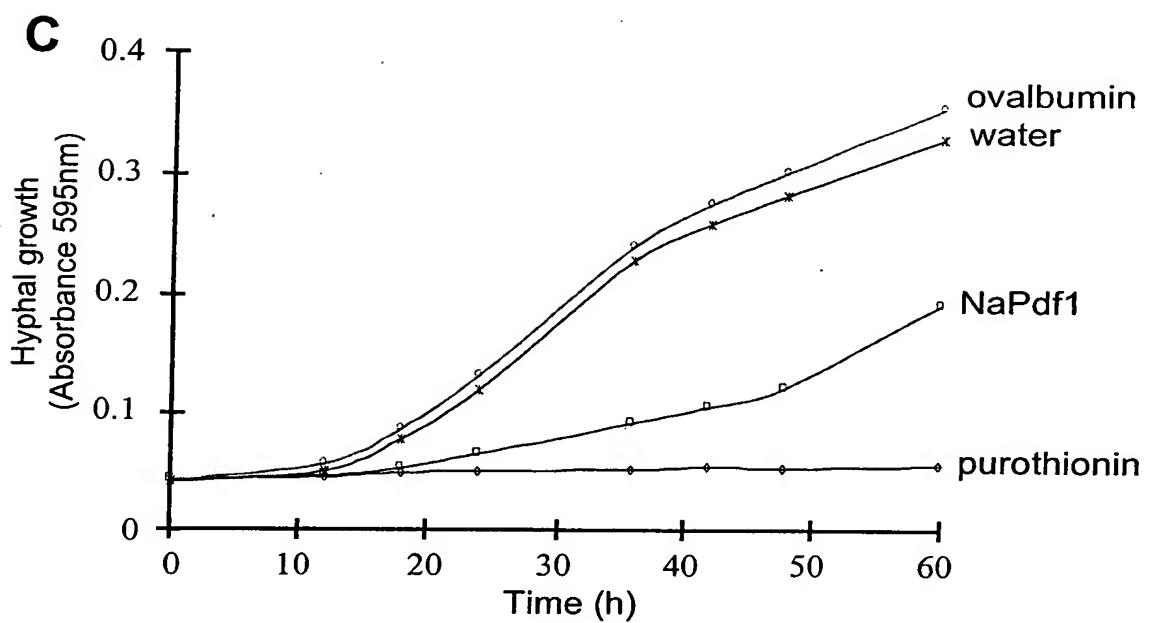


Figure 12 continued



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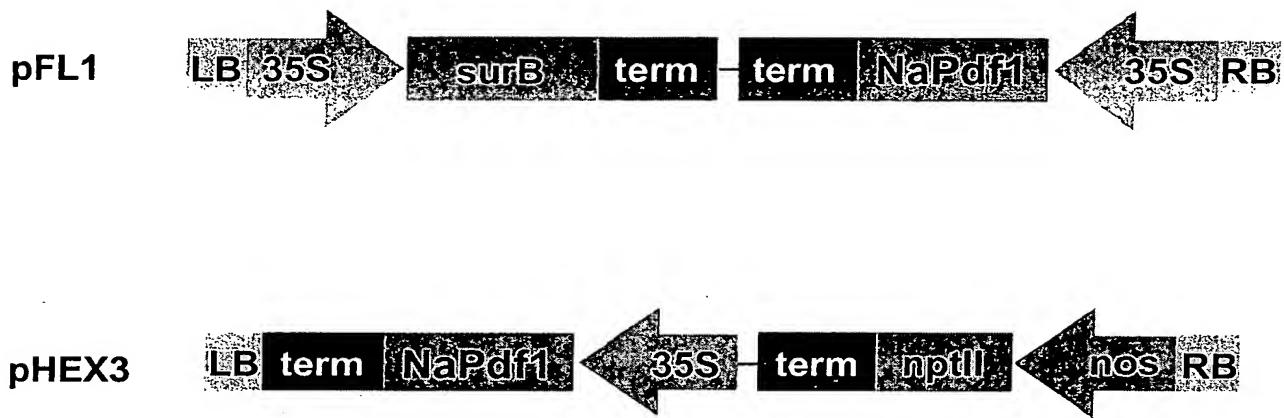


Figure 13



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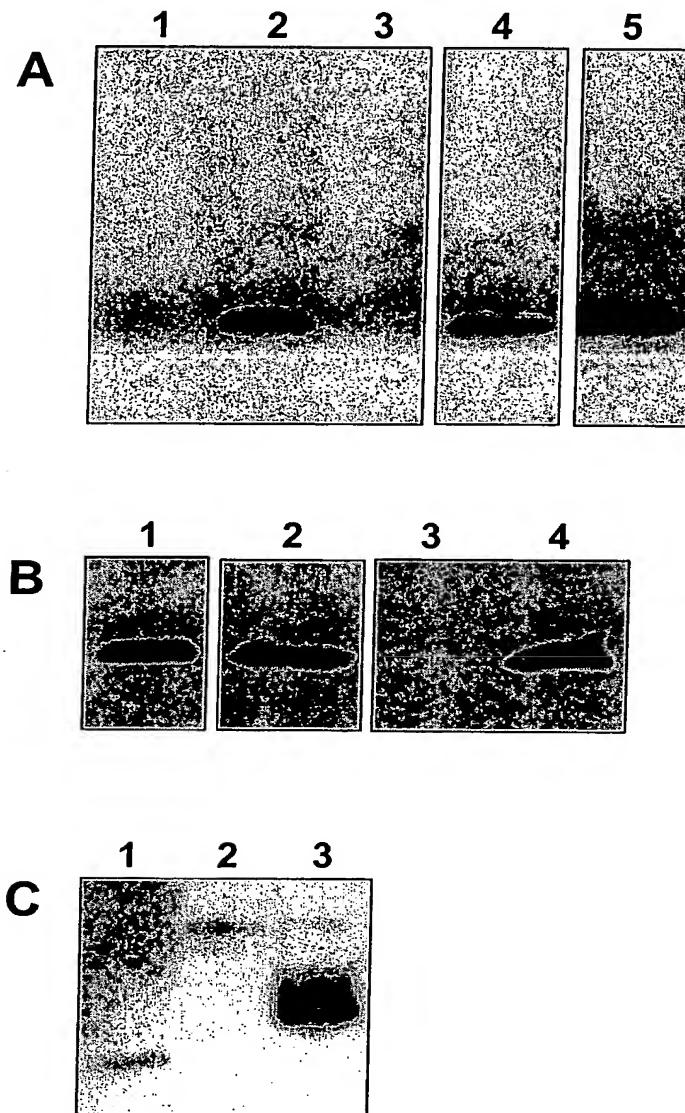


Figure 14



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H. punctigera bioassay with transgenic tobacco

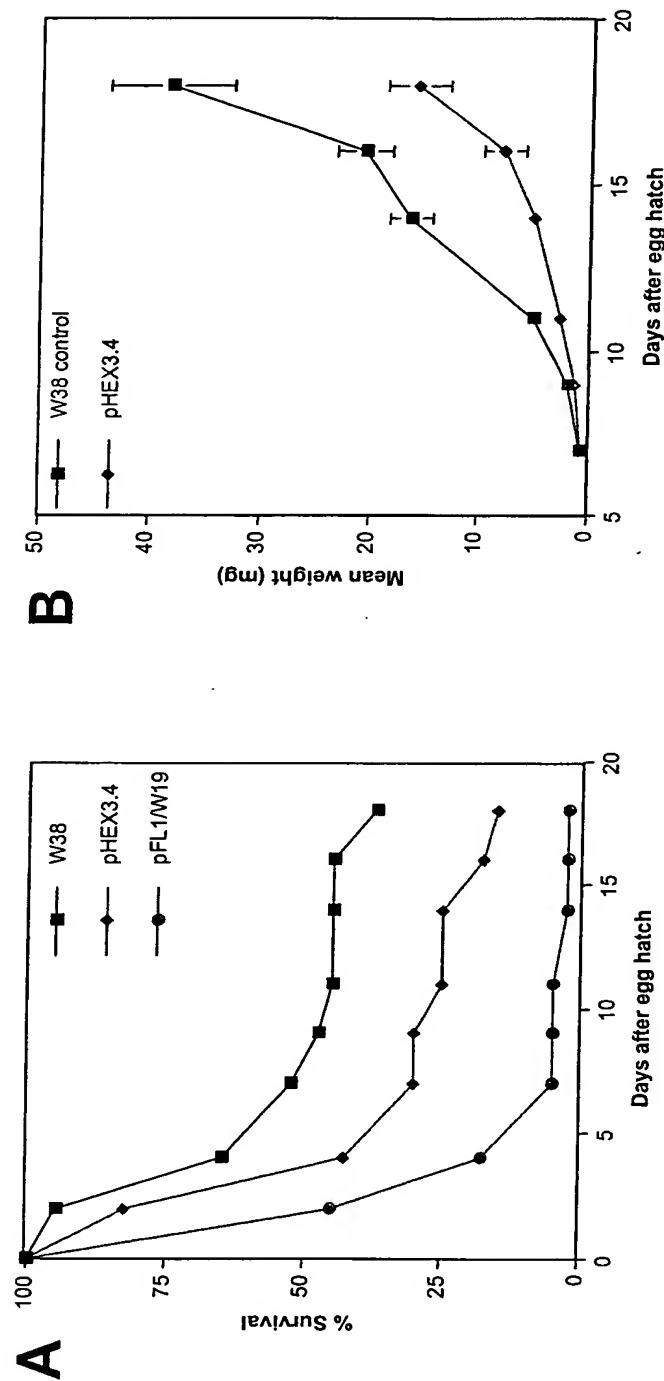


Figure 15



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H. armigera bioassay with transgenic tobacco

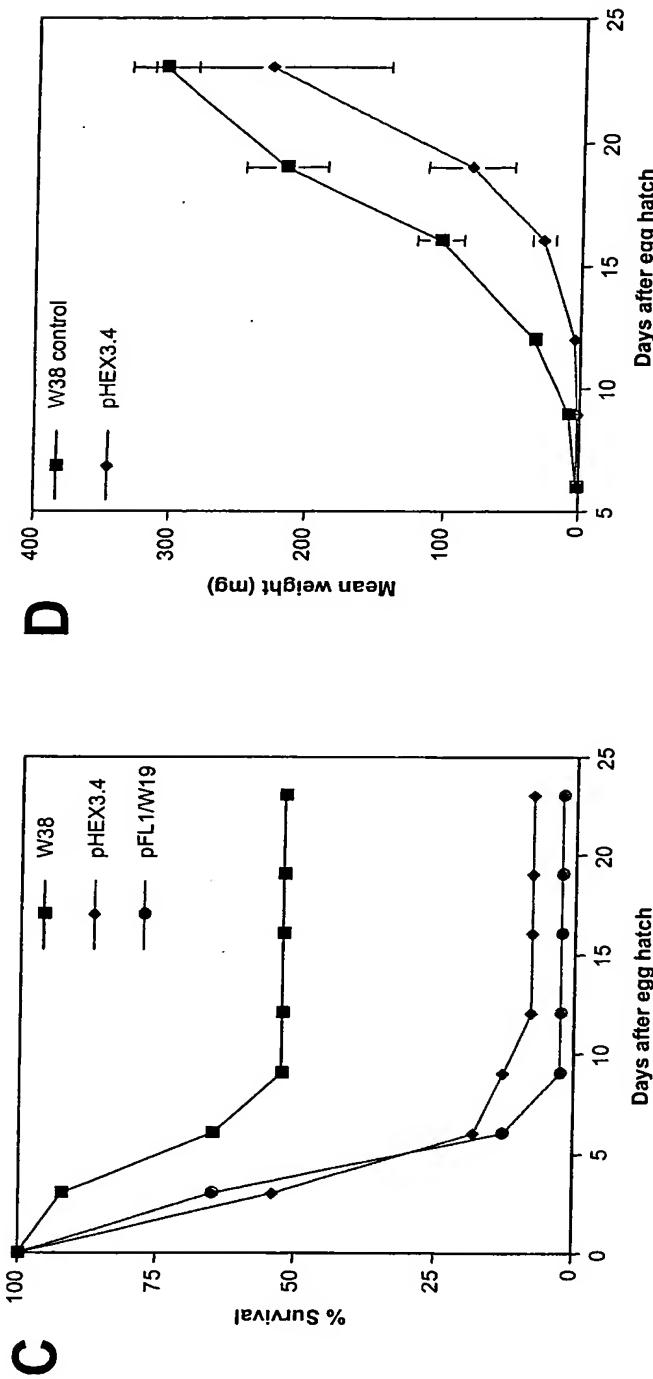


Figure 15 continued



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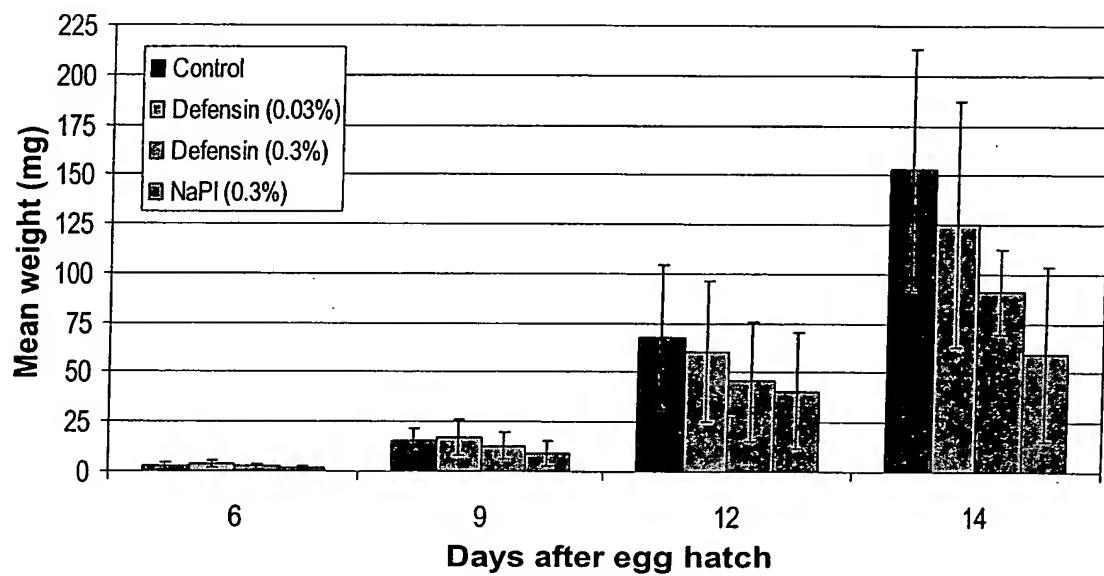
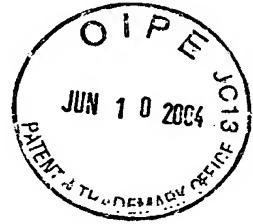


Figure 16



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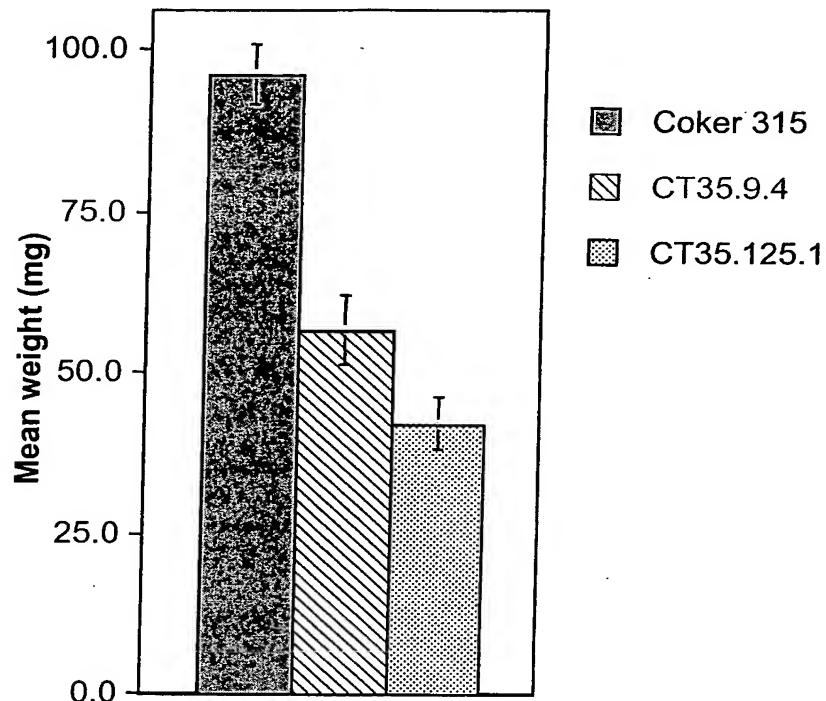


Figure 17